

# CAMPYLOBACTERIOSIS

## ✓ DISEASE AND EPIDEMIOLOGY

### Clinical Description:

The most common symptoms of campylobacteriosis are diarrhea (sometimes bloody), abdominal pain, malaise, fever, nausea, and sometimes vomiting. Infection can cause a spectrum of diseases ranging from mild, uncomplicated gastroenteritis to fulminant disease similar to acute appendicitis. Asymptomatic infections also occur. The illness is usually over within a week, but may be prolonged in some individuals and can sometimes relapse.

Long-term complications include reactive arthritis and Guillain-Barré syndrome, a rare condition that affects the nerves of the body beginning several weeks after the diarrheal illness. This syndrome results in paralysis that lasts several weeks and usually requires intensive care. It is estimated that approximately 1 case in every 1000 reported campylobacteriosis cases leads to Guillain-Barré syndrome, and as many as 40% of Guillain-Barré syndrome cases in this country are triggered by campylobacteriosis.

### Causative Agent:

Campylobacteriosis is caused by motile, gram negative bacteria of the genus *Campylobacter*. *Campylobacter jejuni* causes the majority of disease, with 1% of cases caused by other species including *C. coli*, *C. fetus*, *C. upsaliensis*, *C. lari*, and *C. hyointestinalis*.

### Differential Diagnosis:

*Salmonella*, *E. coli* O157:H7, *Shigella*, *Yersinia enterocolitica*, and bacterial food poisoning may show similar signs and symptoms.

### Laboratory identification:

Stool culture is the preferred method for *Campylobacter* diagnosis. EIA and PCR techniques are also acceptable. Rapid identification can be made by darkfield or phase-contrast microscopy, although the sensitivity of these techniques is low. Microscopy can be useful in making a presumptive diagnosis, but should always be confirmed with stool culturing.

**UPHL:** The Utah Public Health Laboratory accepts stool specimens for isolation. All isolates must be submitted to UPHL.

### Treatment:

Erythromycin and azithromycin can effectively shorten the clinical course of illness and prevent relapse when given early during gastrointestinal infection. Treatment with or azithromycin usually eradicates *Campylobacter* from stool within 2-3 days.

**Case fatality:**

Although *Campylobacter* doesn't commonly cause death, it has been estimated that approximately 500 persons with *Campylobacter* infections die each year.

**Reservoir:**

*C. jejuni* (and other species of *Campylobacter* that may cause disease) are widely prevalent in the gastrointestinal tracts of many animals, notably cattle and poultry, although swine, sheep, and even pets such as birds, kittens, and puppies may be sources of human infection. *C. jejuni* and *C. coli* have been isolated from feces of 30-100% of chickens, turkey, and water fowl.

**Transmission:**

*Campylobacter* is transmitted primarily by ingestion of food or water that has been contaminated with animal feces. Human-to-human fecal-oral transmission also occurs, but most cases of *C. jejuni* infection result from exposure to contaminated food and water. This includes raw and undercooked poultry or pork, inadequately treated drinking water, and raw milk and raw milk products. However, any food contaminated with the bacteria can be a source of infection. In addition, farm animals and pets, such as puppies, with diarrhea can be sources of infection.

Person-to-person spread can also occur, especially among household contacts, pre-school children in daycare, the elderly, and developmentally disabled persons living in residential facilities. Transmission can also occur through certain types of sexual contact (e.g., oral-anal contact). A large dose of organisms is usually needed to cause infection, but the infectious dose may be lower for certain susceptible groups such as children, the elderly, and the immunocompromised.

**Susceptibility:**

All people are susceptible. Lasting immunity to serologically related strains follows infection. In developing countries, most persons are immune by the age of 2 years.

**Incubation period:**

The incubation period is usually 2-5 days, but can vary from 1–10 days. Shorter incubation periods are likely associated with a larger infecting dose of bacteria.

**Period of communicability:**

The disease is communicable for as long as the infected person excretes *Campylobacter* bacteria in his/her stool. This can occur from days to several weeks. People who are not given antibiotics have been known to shed these bacteria for as long as seven weeks.

**Epidemiology:**

*Campylobacter* causes 5-14% of diarrhea worldwide and is the most common bacterial cause of diarrheal illness in the US. It is estimated that 2.5 million cases occur in the US annually, with almost all cases occurring as isolated, sporadic events. Children and young adults have the highest incidence of infection. Infections tend to occur mostly during the warmer months. Although outbreaks due to *Campylobacter* have occurred, they are

uncommon. Over the past 5 years in Utah, an average of 260 cases of *Campylobacter* are reported annually. The most recent outbreak in Utah involved more than 20 confirmed cases and was found to be associated with unpasteurized milk.

## ✓ PUBLIC HEALTH CONTROL MEASURES

### Public health responsibility:

- Investigate all suspect cases of disease and fill out and submit appropriate disease investigation forms.
- Provide education to the general public, clinicians, and first responders regarding disease transmission and prevention
- Identify clusters or outbreaks of this disease and determine the source.
- Identify cases and sources to prevent further transmission.

### Prevention:

#### Environmental Measures

Implicated food items must be removed from consumption. A decision about testing implicated food items can be made in consultation with the enteric epidemiologist at UDOH and UPHL.

The general policy of UPHL is to test only food samples implicated in suspected outbreaks, not in single cases (except when botulism is suspected). If holders of food implicated in single case incidents would like their food tested, they may be referred to a private laboratory that will test food or store the food in their freezer for a period of time in case additional reports are received. However, in certain circumstances, a single, confirmed case with leftover food that had been consumed within the incubation period may be considered for testing.

#### Personal Preventive Measures/Education

To avoid exposure to *Campylobacter*, persons should:

- Always wash their hands thoroughly with soap and water before eating or preparing food, after using the toilet, after changing diapers, and after touching their pets or other animals.
- Wash their own hands as well as the child's hands after changing a child's diapers.
- In a daycare setting, dispose of diapers in a closed-lid garbage can.
- Wash their hands thoroughly and frequently when ill with diarrhea or when caring for someone with diarrhea.
- Hands should be scrubbed for at least 15–20 seconds after cleaning the bathroom, after using the toilet or helping someone use the toilet, after changing diapers, before handling food, and before eating.
- Keep food that will be eaten raw, such as vegetables, from becoming contaminated by animal-derived food products.
- Avoid letting infants or young children come into contact with pets that are sick with diarrhea, especially puppies and kittens.

- Make sure to cook all food products from animals thoroughly, especially poultry products, and avoid consuming raw eggs or cracked eggs, unpasteurized milk, or other unpasteurized dairy products.

Discuss transmission risks that may result from oral-anal sexual contact. Latex barrier protection (e.g., dental dam) may prevent the spread of campylobacteriosis to a case's sexual partners and may prevent exposure to and transmission of other fecal-oral pathogens.

### **Chemoprophylaxis:**

None.

### **Vaccine:**

None.

### **Isolation and quarantine requirements:**

**Isolation:** Food handlers with campylobacteriosis must be excluded from work until diarrhea has resolved.

**NOTE:** A food handler is any person directly preparing or handling food. This can include a patient care or childcare provider.

**Hospital:** Enteric precautions.

**Quarantine:** Contacts who have diarrhea and are food handling facility employees shall be considered the same as a case and shall be handled in the same fashion. No restrictions otherwise.

**NOTE:** In certain circumstances, cases, ill contacts, and/or asymptomatic contacts who are food handlers may be required to have negative stool samples prior to returning to work. The local health department will decide which cases and/or contacts will need negative stool samples prior to returning to work and whether 1 or 2 negative samples is necessary. If a case or contact has been treated with an antimicrobial agent, the stool specimen should not be collected until at least 48 hours after cessation of therapy. If 2 negative stool samples are determined to be necessary they should be taken at least 24 hours apart.

## **CASE INVESTIGATION**

### **Reporting:**

All cases of campylobacteriosis should be reported to public health.

### **Case definition:**

#### **Campylobacter Infection (1990)**

##### **Clinical description**

An infection that may result in diarrheal illness of variable severity.

##### **Laboratory criteria**

Isolation of *Campylobacter* from any clinical specimen.

##### **Case classification**

*Probable*: a clinically compatible case that is epidemiologically linked to a confirmed case.

*Confirmed*: a case that meets the laboratory criteria for diagnosis.

### **Comment**

Only confirmed cases are reported to the laboratory-based surveillance system managed by the Foodborne and Diarrheal Diseases Branch, Division of Bacterial and Mycotic Diseases, National Center for Infectious Diseases, CDC.

## **Case Investigation Process:**

- Food handlers should be excluded from work until diarrhea has resolved. Negative stool specimens may also be required.
- Assure isolate submission to UPHL.

## **Outbreaks:**

CDC defines a food-borne outbreak as, “an incident in which two or more persons experience a similar illness resulting from the ingestion of a common food”. In order to confirm an outbreak of campylobacteriosis, the same *Campylobacter* species must be isolated from clinical specimens from at least 2 ill persons or the species must be isolated from an epidemiologically implicated food. The source of the infection should be identified and measures to identify additional ill persons and/or to remove the source from consumers should be taken.

## **Identification of case contacts and management:**

### **Daycare**

Since campylobacteriosis may be transmitted from person to person through fecal-oral transmission, it is important to follow-up carefully on cases of campylobacteriosis in a daycare setting. General recommendations include:

- Children with *Campylobacter* infection who have diarrhea should be excluded until their diarrhea is resolved.
- Children with *Campylobacter* infection who have no diarrhea and are not otherwise ill may be excluded or may remain in the program if special precautions are taken.
- Most staff in childcare programs are considered food handlers. Those with *Campylobacter* in their stool (symptomatic or not) can remain on site but must not prepare food or feed children until their diarrhea has resolved. Negative stool specimens may be required.

### **School**

Since campylobacteriosis may be transmitted from person to person through fecal-oral transmission, it is important to follow up on cases in school settings. General recommendations include:

- Students or staff with *Campylobacter* infection who have diarrhea should be excluded until their diarrhea is resolved.

- Students or staff with *Campylobacter* who do not handle food, have no diarrhea or have mild diarrhea, and are not otherwise sick may remain in school if special precautions are taken.
- Students or staff who handle food and have *Campylobacter* infection (symptomatic or not) must not prepare food until their diarrhea is gone and they have 1 negative stool specimen (collected at least 48 hours after completion of antimicrobial therapy, if antimicrobials are given).

### **Community Residential Programs**

Actions taken in response to a case of campylobacteriosis in a community residential program will depend on the type of program and the level of functioning of the residents.

In long-term care facilities, residents with campylobacteriosis should be placed on standard (including enteric) precautions until their symptoms subside. Staff members who give direct patient care (e.g., feed patients, give mouth or denture care, or give medications) are considered food handlers and should be treated as such. In addition, staff members with *Campylobacter* infection who are not food handlers should not work until their diarrhea is resolved.

In residential facilities for the developmentally disabled, staff and clients with campylobacteriosis must refrain from handling or preparing food for other residents until their diarrhea has subsided. Negative stool specimens may be required. In addition, staff members with *Campylobacter* infection who are not food handlers should consider not working until their diarrhea is resolved.

### **REFERENCES**

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